cooling loop. As shown in FIG. **7**C, the cooling system for the auxiliary battery module **702** illustrated in FIG. **7**C is separate and independent from the cooling system of the main battery **762** illustrated in FIG. **7**B.

[0059] A controller **780***a* (that includes an onboard computer) at the electric vehicle, such as previously described herein, monitors a first temperature sensor **782** at the primary battery **762**, and detects whether the temperature sensor **782** measures an out of range temperature condition (e.g., exceeds one or more upper threshold values or falls below one or more lower threshold values), and, if so, and can control and adjust (via electrical signals over electrical connection lines, not shown in FIG. **7**B) any or all of the EAC compressor **728***a*, pump **736**, fan **726***a*, active grill shutter **720**, expansion value **730***a*, and coolant heater **738** to bring/maintain the temperature of the auxiliary battery **702***a* to a value within one or more permissible ranges.

[0060] As shown in FIG. **7**C, the thermal management system of the auxiliary battery module **702** includes an auxiliary battery module coolant line **734***b* (e.g., metal tubing such as copper alloy, aluminum alloy, steel alloy, etc.) that is connected to a coolant pump **758**, a degas/bleed coolant reservoir **756**, a heat exchanger **742***b* (e.g., a refrigerant-to-coolant heat exchanger), and the auxiliary battery **702***a* (i.e., the arrangement of battery elements). These components as connected by the auxiliary battery coolant line **734***b* form an auxiliary battery module cooling loop that is separate and distinct from and independent of the primary battery cooling loop. As shown in FIG. **7**C, the cooling system for the auxiliary battery module **702** illustrated in FIG. **7**C is separate from and independent of the cooling system of the main battery **762** illustrated in FIG. **7**B. The auxiliary battery module **702** in this example also includes a refrigeration system including a condenser **722***b*, a receiver dryer (RD) **723***b*, refrigerant lines **724***b*, a fan **726***b*, an electric A/C compressor (EAC) **728***b*, and an expansion valve **730***b*, which may be a thermal expansion valve with a solenoid or an electronic expansion valve. Pressure sensors **727***b* and temperature sensors **729***b* may be located at one or both refrigerant lines **724***b* at both sides of the EAC **728***b* to monitor/measure the pressure and temperature, respectively, of the refrigerant, e.g., for use in controlling the EAC **728***b*.

[0061] A controller **780***b* (that includes an onboard computer) at the auxiliary battery module **702** can monitor a temperature sensor **784** at the auxiliary battery module **702**, and detects whether the temperature sensor **784** measures an out of range temperature condition (e.g., exceeds one or more upper threshold values or falls below one or more lower threshold values), and, if so, and can control and adjust (via electrical signals over electrical connection lines, not shown in FIG. **7**C) any or all of the EAC compressor **728***b*, pump **758**, fan **726***b*, and expansion value **730***b* to bring/maintain the temperature of the auxiliary battery **702***a* to a value within one or more permissible ranges. One or more fans **726***b* can direct air flow over the condenser **722***b* and through inlet air vents **752** and **754** and outlet air vents **756** and **758** shown in FIG. **7**A.

[0062] FIG. **7**D illustrates a block diagram of a variation of the thermal management system of FIG. **7**C of the auxiliary battery module **702**. Whereas the thermal management system illustrated in FIG. **7**C is shown as including one heat exchanger, which may be, e.g., a refrigerant-to-coolant heat exchanger or a coolant radiator without refrigerant lines, the exemplary system shown in FIG. **7**D includes two heat exchangers, e.g., both a refrigerant-to-coolant heat exchanger and a coolant radiator without refrigerant lines in this example. Various components shown in FIG. **7**D may be the same as those shown in FIG. **7**C, and like reference numerals are used in FIG. **7**D.

[0063] As shown in FIG. **7**D, the exemplary thermal management system for the auxiliary battery module **702** includes a first auxiliary battery module coolant line **734***b* (e.g., metal tubing such as copper alloy, aluminum alloy, steel alloy, etc.) that is connected to a coolant pump **758**, a degas/bleed coolant reservoir **756**, a first heat exchanger **742***b* (e.g., a refrigerant-to-coolant heat exchanger), and the auxiliary battery **702***a*. These components as connected by the auxiliary battery coolant line **734***b* form an auxiliary battery module cooling loop that is separate and distinct from and independent of the primary battery cooling loop. As shown in FIG. **7**D, the cooling system for the auxiliary battery module **702** illustrated in FIG. **7**D is separate from and independent of the cooling system of the main battery **762** illustrated in FIG. **7**B. The auxiliary battery module **702** in this example also includes a refrigeration system including a condenser **722***b*, a receiver dryer (RD) **723***b*, refrigerant lines **724***b*, a fan **726***b*, an electric A/C compressor (EAC) **728***b*, and an expansion valve **730***b*, which may be a thermal expansion valve with a solenoid or an electronic expansion valve, so as to provide cooling via a refrigerant for the first heat exchanger **742***b*. Pressure sensors **727***b* and temperature sensors **729***b* may be located at one or both refrigerant lines **724***b* at both sides of the EAC **728***b* to monitor/measure the pressure and temperature, respectively, of the refrigerant, e.g., for use in controlling the EAC **728***b*.

[0064] The exemplary thermal management system shown in FIG. **7**D for the auxiliary battery module **702** also includes a second auxiliary battery module coolant line **734***c* (e.g., metal tubing such as copper alloy, aluminum alloy, steel alloy, etc.) that is connected to the first auxiliary battery module coolant line **734***b* via bypass valves **744***a* and **744***b* and which is connected to a second heat exchanger **742***c*, e.g., in the form of a radiator **746** and an active grill shutter (AGS) **748** in this example and which utilizes fan(s) **726***b*. The bypass valves **744***a* and **744***b* can be actuated under control of a controller **780***c* to invoke battery cooling either using the first heat exchanger **742***b* or the second heat exchanger **742***c*.

[0065] For example, when the ambient outside temperature measured by a temperature sensor in communication with the controller **780***c* is above a first threshold temperature (e.g., a high temperature such as 90° F., 95° F., 100° F., etc.), the controller **780***c* can control the bypass values **744***a* and **744***b* to route coolant through the first auxiliary coolant line **734***b* to the first heat exchanger **742***b* so as to permit refrigerant cooled by compressor **728***b* to cool the coolant destined for cooling the auxiliary battery **702***a* and to bypass the second heat exchanger **742***c*. For example, if the outside ambient temperature is 115° F., refrigerant cooling may be needed to adequately cool the auxiliary battery **702***a*, and the controller **780***c* therefore controls the bypass valves **744***a* and **744***b* accordingly.

[0066] When the ambient outside temperature measured by a temperature sensor in communication with the controller **780***c* is below the first threshold temperature, the controller **780***c* can control the bypass valves **744***a* and **744***b* to bypass the first heat exchanger **742***b* and route coolant from the first auxiliary coolant line **734***b* to the second auxiliary